Glossary

Abiotic Environment. The nonliving components of the environment.

Adaptive Management. A formal, structured approach to dealing with uncertainty in natural resource management, using the experience of management as an ongoing, continually improving process.

Barrens. Areas of sandy soil dominated by grasses, low shrubs, and small trees and subject to frequent wildfire. In general, the barrens community takes the form of pine barrens in northern and central Wisconsin and oak barrens in southern and west-central Wisconsin. Bracken grasslands are also a part of the barrens community.

Biological Diversity. The spectrum of life forms and the ecological processes that support and sustain them. Biological diversity occurs at four interacting levels: genetic, species, community, and ecosystem. In shortened form, biological diversity is known as biodiversity.

Biosphere. The parts of the earth's surface layers, waters, and atmosphere in which living things exist.

Biotic Environment. The living components of the environment.

Biotic Province. Subdivisions of the earth's surface into geographical land units based on ecological associations of plants and animals. Also known as biomes and major life zones. Examples are tundra, northern coniferous forest, desert, grassland, and tropical forest.

Bracken-Grassland. The northern version of prairie, similar in structure but floristically very different, with bracken fern being the dominant species.

Brush Prairie. Prairie with young trees and shrubs less than 6 ft tall, maintained in this condition by repetitive fire.

Capability (Ecological). The long-term ability of an ecosystem to sustain diverse assemblages of microbial, plant, animal, and human communities and to retain the integrity of ecological composition, structure, and function under different management alternatives.

Cedar Glade. Savannas occurring on dry limestone bluffs, with red cedar more prevalent than oaks.

Climax Community. In theory, the final community in a successional series, a community that is self-perpetuating, in equilibrium with the physical habitat, and controlled by the regional climate. Disturbance and topographic and soil conditions strongly influence the species we associate with climax conditions at a particular sites.

Community. An assemblage of species living together in a particular area, at a particular time, in a prescribed habitat. Communities usually bear the name of their dominant plant species but include all of the microbes, plants, and animals living in association with the dominant plant species at a given time.

Community Diversity. The variety and type of species present in a community, the complexity of their interactions, and the age and stability of the community. The community diversity of a region is influenced by the number of communities present, the degree of difference among the communities, and how the communities are distributed across the region.

Composition. The makeup of an ecological unit in terms of the organisms or groups of organisms present in a unit area or geographical area contains.

Critical Thinking. A process of reflection and analysis that involves the identification of assumptions, the identification of existing knowledge, the exploration of alternatives, and the integration of new understandings into thought and behavior patterns. As applied to natural resource or environmental decision-making, it results in the integration of current scientific knowledge and clarified values.

Dystrophic Lakes. Nutrient-limited lakes, with low species diversity, simplified systems, and extremely low levels of energy transfer (i.e., short food chains) (also known as bog lakes).

Ecological Processes. Actions or events that link organisms and their environment. Examples are nutrient cycling, carbon cycling, predation, and primary productivity.

Ecoregion. Areas of relatively homogenous ecological systems. Ecoregions are usually based on patterns of land use, topography, present and potential natural vegetation, and soils. Ecoregion designations are used by resource managers to develop logical, regional strategies for land acquisition and management.

Ecosystem. A biotic community and its abiotic environment, considered together as a unit. Ecosystems are characterized by flow of energy that leads to trophic structure and material cycling (i.e., exchange of materials between living and nonliving parts). Ecosystem is a shortened form of the term ecological system.

Ecosystem Diversity. The diversity in structure and function within an ecosystem. It is determined by the amount and complexity of linkages among the plants and animals of an ecosystem and their abiotic environment.

Ecosystem Management. A system to assess, conserve, protect, and restore the composition, structure, and function of ecosystems, to ensure their sustainability across a range of temporal and spatial scales and to provide desired ecological conditions, economic products, and social benefits.

Edge. The zone where two different habitat types meet. It can range from an abrupt change from one to the other (hard edge) to a gradual integration of the two (soft edge).

Edge Effects. The ecological impact of interfacing two or more habitat types. Edge is inherent or natural in nature but can have negative impacts if its creation alters ecological processes. In general, edge effects increase in relation to the dissimilarity between adjoining habitats.

Environmental Pollution. The human-induced movement of many types of substances within and between air, land, and water components of ecosystems in quantities and at rates that adversely impact organisms, habitats, communities, ecosystems, or public health.

Eutrophic Lakes. Lakes that are high in nutrients but continue to show normal species diversity and ecological processes.

Fen. A highly restricted type of wet prairie that supports an unusually specialized flora. It forms on wet to moist and often peaty, calcareous soils that have developed over a diffuse groundwater discharge area that is often under artesian pressure.

Fragmentation. The breaking up of large and continuous ecosystems, communities, and habitats into smaller areas surrounded by altered or disturbed land or aquatic substrate.

Function. The roles played by the biotic and abiotic components of ecosystems in driving the processes (e.g., carbon cycle, water cycle, nutrient cycle) that sustain the ecosystem.

Genes. The functional unit of heredity—the components of DNA molecules that control heredity characteristics in organisms.

Genetic Diversity. The spectrum of genetic material carried by different organisms. Genetic diversity has the potential to increase or decrease over time due to recombination.

Geographic Information System (GIS). A system of computer hardware and software that can input, manipulate, and analyze large amounts of **geographically referenced data** to support the decision-making processes of an organization.

Geographically Referenced Data. Information that is spatially keyed to a coordinate system for the earth so that different data layers (or maps) can be overlayed or integrated. This type of data is the foundation of **Geographic Information Systems (GIS)**.

Grassland. Refers collectively to several native Wisconsin plant communities, including prairie, brush prairie, sand barrens, bracken-grassland, fen, and sedge meadow.

Habitat. The place where an organism lives and its surrounding environment, including its biotic and abiotic components. Habitat includes everything an organism needs to survive.

Hypereutrophic Lakes. Lakes that have nutrient levels so high that the functions of the system may be affected.

Interior Habitat. That portion of a community not influenced by edge effects because it is far enough removed from its outside boundaries.

Isolation Effects. The impact of isolating habitat patches from similar habitat through fragmentation.

Landscape. An area composed of adjacent and interacting ecosystems that are related because of geology, land forms, soils, climate, biota, and human influences.

Landscape Scale. The appropriate **spatial** and **temporal scale** for planning, analysis, and improvement of management activities to sustain ecosystem capability and achieve **ecosystem management** objectives.

Mesotrophic Lakes. Midway between oligotrophic and eutrophic lakes in nutrients.

Northern Forest. A Wisconsin community characterized by mixed deciduous and coniferous tree species. In broader terms, it may be characterized as a region representing the area north of the tension zone that divides Wisconsin into two distinct climatic zones.

Oak Opening. Savanna on rich, mesic soils with mostly bur or white oak.

Old Growth. A community with dominant trees at or near biological maturity. The age and structure of an old-growth community varies with species and site. Old-growth stands are sometimes characterized by a multi-layered, uneven age and size class structure; a high degree of compositional and structural patchiness and heterogeneity; and significant amounts of woody debris and tip-up mounds.

Oligotrophic Lakes. Lakes that are low in nutrients, with low levels of energy transfer and simplified systems, but not to the extent of dystrophic lakes. Oligotrophic lakes, such as Lake Superior, are often considered to be the epitome of desirable water quality conditions.

Postglacial. The period after the melting of the last glacier (the Wisconsin Glacier), from approximately 10,500 years ago up to the present.

Prairie. A plant community dominated by grasses and forbs, although woody shrubs and occasional tree seedlings may also be present. Prairies frequently grade imperceptibly into other communities such as oak savanna and sedge meadow.

Presettlement. The period before the arrival and extended presence of non-Native American people in Wisconsin.

Region. Region has no specific spatial or fixed-area definition. Like scale, the appropriate definition of region will vary according to the scope of the problem or project being considered. The geographic area included in any particular definition of region will be determined by our knowledge of the breadth of the interconnections among the biotic communities involved.

Sand Barrens. Similar to dry sand prairie, but with far sparser vegetation and generally including exposed sand or sandblows. Most sand barrens today are artifacts of post-settlement activity, primarily failed attempts at agriculture.

Savanna. A community that was historically part of a larger ecotone complex bordered by the prairies of the west and the deciduous forests of the east. This ecotone was a mosaic of plant community types that represented a continuum from prairie to forest. Savannas were the communities in the middle of this continuum. Characteristically, savannas have less than 50% crown cover.

Scale. The relative amount or degree of something. In relation to ecosystems, scale has both spatial and temporal meanings (see **spatial scale** and **temporal scale**).

Sedge Meadow. Distinguished from wet prairie by having (1) more sedge than grass vegetation, (2) more organic than mineral soil, and (3) seasonally standing water. It also supports a less diverse flora than wet prairie.

Simplification. A reduction in the diversity of genetic, species, or community resources, and a reduction in the complexity of the interrelationships within them. Simplification affects the composition, structure, and/or function of ecosystems.

Size Effects. The ecological impact of decreasing or increasing the size of land units.

Southern Forest. A community characterized by several species of oak and by the presence of several tree species normally not found north of the tension zone (i.e., shagbark hickory, hackberry, boxelder, and black walnut).

Spatial Scale. The geographic size of a community or ecosystem. Spatial scale can range from a microsite such as the underside of a leaf on the forest floor, to a forest, to the larger landscape. The biosphere (i.e., the planet earth) can be thought of as the maximum spatial scale.

Species. A group of individuals that can interbreed successfully with one another, but not with members of other groups. Plants and animals are identified as belonging to a given species based on similar morphological, genetic, and biochemical characteristics.

Species Diversity. The variety of species in an area. It includes not only the number of species in the area but also their relative abundance and spatial distribution. Species richness is one component of species diversity, but not the only determinant.

Species Richness. The number of species in an area.

Structure. The pattern or physical organization of an area. It has both vertical and horizontal components.

Succession. Progressive temporal changes in species composition, organic structure, and energy flow in a community.

Sustainability. Long-term management of **ecosystems** to meet the needs of present human populations without interruption, weakening, or loss of the resource base for future generations.

Tallgrass Prairie. The eastern portion of the grassland biome (including Wisconsin), characterized by productive soils, ample precipitation, and tall grasses as the dominant vegetation..

Temporal Scale. The time required to complete a life history event or ecological process. Temporal scale can vary from a few seconds for biochemical reactions to thousands of years for ecosystem development. For geologic changes, temporal scale reaches millions of years.

Transdisciplinary Perspective. The ability to transcend the focus and tenets of a particular discipline (e.g.,fisheries, forestry, wildlife management) to consider the widest range of options for managing a particular landscape unit.

Trophic structure. The inter-relationship of all organisms within a community food web as determined by the specific role each plays as a producer and/or consumer of energy or food resources.

Values. Principles, standards, or qualities considered worthwhile or desirable from a particular viewpoint.

Wetland. An area where water is at, near, or above the land surface long enough to be capable of supporting aquatic or hydrophytic vegetation and which has soils indicative of wet conditions.